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Intracavity losses investigation of LiCaAlF6:Ce3+ laser

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Abstract

We have discovered that total intracavity losses, being dependent on color centers amount, go down for higher pump energies for LiCaAlF6: Ce3+. This dependence is explained by the formation by the pump radiation and destruction of color centers due to laser radiation. The more energy remains in the lasing cavity, the lower the color centers absorption. Such dependencies were investigated for active medium crystals grown by different methods. Influence of growth conditions on active media characteristics is discussed. As a result we have shown for the first time that the crystal LiCaAlF6:Ce3+ internal losses depend on the pump energy. Method has been worked out to determine the intracavity losses of the laser, which allows evaluation of prospects of its practical use in the most correct way. © 2011 SPIE.

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Keywords

Intracavity losses, Solid-state UV active media, UV lasers